

# V640 Series NEW

CSM\_V640\_Series\_DS\_E\_3\_1

**Line-up Ethernet I/F model newly. RFID system for Semiconductor applications, supports reading and writing TI (Texas Instruments) transponders**

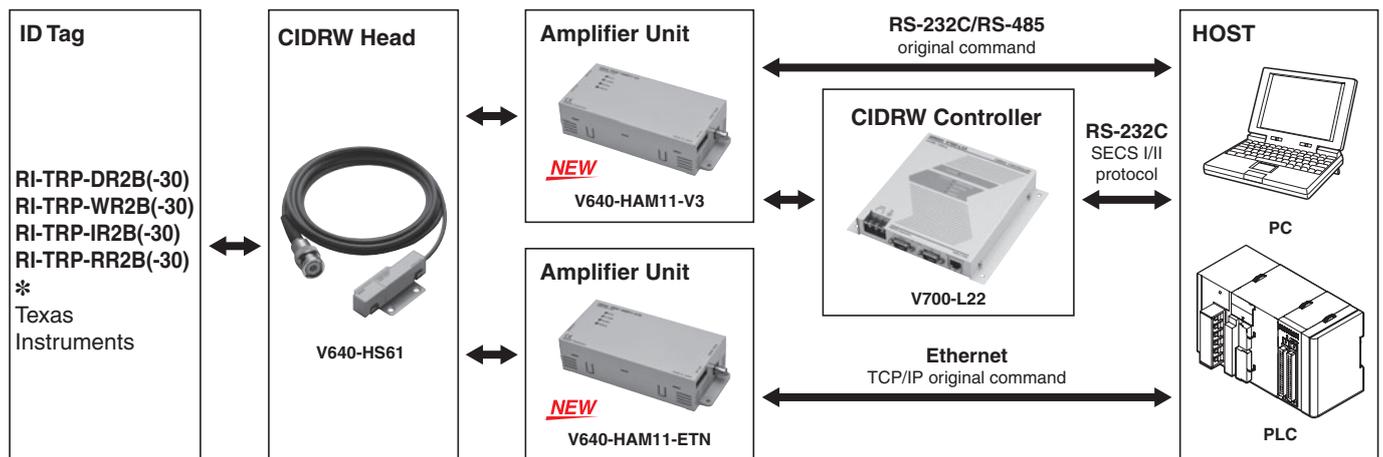
- Conforms to SEMI standards (E4, E5, E99, E15.1)
- Supports SECS commands ( via CIDRW Controller Model. V700-L22)
- Embedded Web browser function provides easy configuration and read/write testing (Ethernet type only)
- Enhanced functions, TEST Mode / Detecting for CIDRW Head status
- Conformed to many local Radio regulations. (CE / FCC / IC/Korea/China/Taiwan/Singapore/Indonesia)



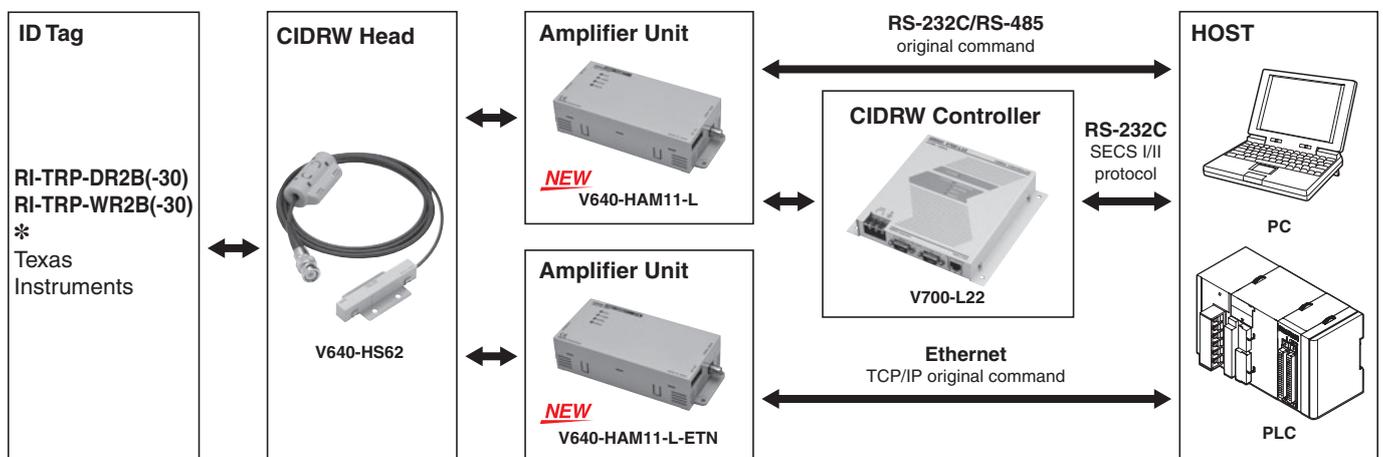
Be sure to read the "Safety Precautions" on page 8

## System Configuration

### Standard Models



### Long-range Communications Model



- Note: 1.** Use of the V700-L11 ID Link Unit enables the Amplifier Unit to be removed/installed while the CIDRW System remains turned ON in the event of a malfunction or during maintenance.
- 2.** Use the V700-L22 CIDRW Controller when using SECS communications protocol.
- 3.** Refer to the *User's Manual* (V640-HAM11-V3, V640-HAM11-L: Cat. No. Z307; V640-HAM11-L-ETN, V640-HAM11-ETN: Cat. No. Z308) for details.
- \*Communication performance does not guarantee.

# V640 Series

**Enables reading and writing transponders for various Semiconductor applications, such as FOUPs (Front-Opening Unified Pods), reticles, and pods.**

- Antenna dimensions conform to SEMI E15.1.
- Conforms to Carrier Reader/Writer-related SEMI standards; SEMI E99, E4, and E5.
- V700-L22 conforms to SEMI standard E99-0303 (issued March 2003).
- Lineup includes compact models designed for long-range communications.
- CE marking/FCC approvals

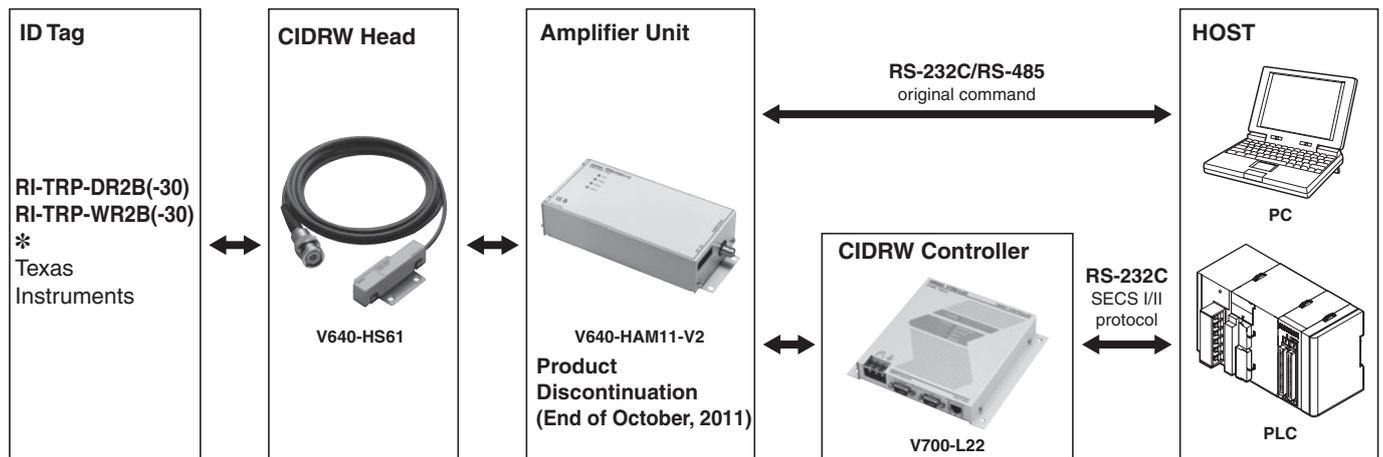


V640-HAM11-V2  
Product Discontinuation  
(End of October, 2011)

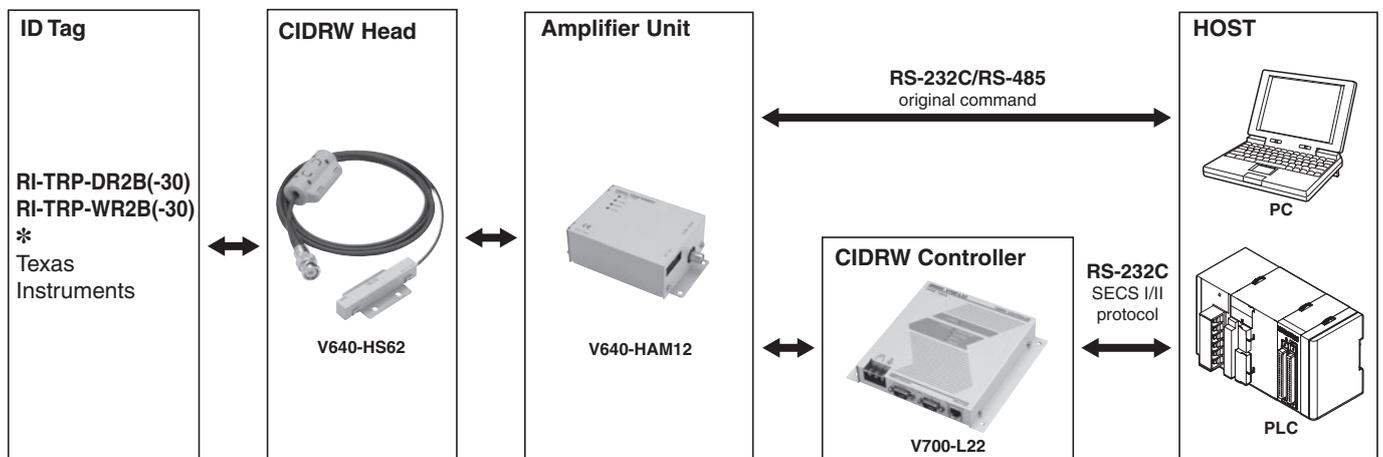
Be sure to read the "Safety Precautions" on page 8

## System Configuration

### Standard Models



### Long-range Communications Model



- Note:**
1. Use of the V700-L11 ID Link Unit enables the Amplifier Unit to be removed/installed while the CIDRW System remains turned ON in the event of a malfunction or during maintenance.
  2. Use the V700-L22 CIDRW Controller when using SECS communications protocol.
  3. Refer to the *User's Manual* (V640-HAM11-V2: Cat. No. Z167; V640-HAM12: Cat. No. Z218) for details.
- \*Communication performance does not guarantee.

## Ordering Information

## List of Models

Name	Appearance	Size	Specifications	Model
CIDRW Head		50 × 30 × 12 mm (including mounting plate)	Standard Models 2-meter cable	<b>V640-HS61</b>
		65 × 30 × 12 mm (including mounting plate)	Long-range Communications Model 1.9-meter cable	<b>V600-HS62</b>
Amplifier Unit		80 × 185 × 43 mm	RS-232C interface RS-485 interface 24 VDC	<b>V640-HAM11-V3</b>
		80 × 185 × 43 mm	Ethernet interface 24 VDC	<b>V640-HAM11-ETN</b>
		80 × 185 × 43 mm	RS-232C interface RS-485 interface 24 VDC	<b>V640-HAM11-L</b>
		80 × 185 × 43 mm	Ethernet interface 24 VDC	<b>V640-HAM11-L-ETN</b>
		80 × 185 × 43 mm	RS-232C interface RS-485 interface 24 VDC	<b>V640-HAM11-V2</b> Product Discontinuation (End of October, 2011)
		80 × 125 × 43 mm		<b>V640-HAM12</b>
CIDRW Controller		150 × 167 × 28 mm	24 VDC RS-232C interface (Compatible with SECS I/II protocol.)	<b>V700-L22</b>
ID Link Unit		110 × 65 × 64 mm	24 VDC RS-232C interface RS-485 interface	<b>V700-L11</b>
Connector accessories for the V640 Amplifier Unit		Power Supply Connector (1) Power Supply Connector Pins (3) }* RS-485 Port Connector (1)		<b>V640-A90</b>

\*V640-A90 includes all of these accessories as a set. To purchase individual accessories, contact the manufacturers below directly.

## Purchasing Individual Accessories

Name	Model	Manufacturer
Power Supply Connector	1-178288-3	Tyco Electronics
Power Supply Connector Pins	175217-3	
RS-485 Port Connector	MSTB2.5/2-STF-5.08	Phoenix Contact Inc.

## Specifications and Ratings

### CIDRW Head

Item	Model	<b>V640-HS61</b> 	<b>V640-HS62</b> 
Transmission frequency	134 kHz		
Insulation resistance	20 MΩ min. (at 100 VDC) between the connector terminals and the case		
Dielectric strength	1,000 VAC (50/60 Hz, 1 minute) between the connector terminals and the case (leakage current: 5 mA max.)		
Vibration resistance	10 to 150 Hz, 0.20-mm double amplitude, 15-m/s <sup>2</sup> acceleration with 10 sweeps of 8 min each in X, Y, and Z directions		
Shock resistance	150-m/s <sup>2</sup> acceleration for 3 times each in X, Y, and Z directions (18 times in total)		
Ambient operating temperature	0 to 40°C (with no icing)		
Ambient operating humidity	35% to 85% (with no condensation)		
Ambient storage temperature	-15 to 65°C (with no icing)		
Ambient storage humidity	35% to 85% (with no condensation)		
Degree of protection	IEC60529: IP20		
Cable	2-m (3-mm dia.) coaxial cable	1.9-m (3-mm dia.) coaxial cable	
Case	ABS/epoxy resin, stainless-steel mounting fixture		
Weight	Approx. 70 g	Approx. 100 g	

### CIDRW Controller

Item	Model	<b>V640-HAM11-V3</b> 	<b>V640-HAM11-L</b> 	<b>V640-HAM11-ETN</b> 	<b>V640-HAM11-L-ETN</b> 
Host interface	RS-232C/RS-485			Ethernet (TCP/IP)	
Power supply voltage	24 VDC (max. fluctuation 20.4 to 26.4 VDC)				
Current consumption	150mA or less	400mA or less	150mA or less	400mA or less	
Insulation resistance	20 MΩ min. (at 100 VDC) between the power supply terminals and the frame ground terminal				
Dielectric strength	1,000 VAC (50/60 Hz, 1 minute) between the power supply terminals and the frame ground terminal (leakage current: 5 mA max.)				
Vibration resistance	10 to 150 Hz, 0.20-mm double amplitude, 15-m/s <sup>2</sup> acceleration with 10 sweeps of 8 min each in X, Y, and Z directions				
Shock resistance	150-m/s <sup>2</sup> acceleration for 3 times each in X, Y, and Z directions (18 times in total)				
Ambient operating temperature	0 to 40°C (with no icing)				
Ambient operating humidity	35% to 85% (with no condensation)				
Ambient storage temperature	-15 to 65°C (with no icing)				
Ambient storage humidity	35% to 85% (with no condensation)				
Degree of protection	IEC60529: IP20				
Case	ABS+PC				
Ground	Ground at a resistance of less than 100 Ω.				
Weight	Approx. 250 g				

## Amplifier Unit

Item	Model		
Host interface	RS-232C (via dedicated 1:1 protocol or 1:N protocol) or RS-485		
Power supply voltage	24 VDC (max. fluctuation 20.4 to 26.4 VDC)		
Current consumption	150mA or less	400mA or less	
Insulation resistance	20 MΩ min. (at 100 VDC) between the power supply terminals and the frame ground terminal		
Dielectric strength	1,000 VAC (50/60 Hz, 1 minute) between the power supply terminals and the frame ground terminal (leakage current: 5 mA max.)		
Vibration resistance	10 to 150 Hz, 0.20-mm double amplitude, 15-m/s <sup>2</sup> acceleration with 10 sweeps of 8 min each in X, Y, and Z directions		
Shock resistance	150-m/s <sup>2</sup> acceleration for 3 times each in X, Y, and Z directions (18 times in total)		
Ambient operating temperature	0 to 40°C (with no icing)		
Ambient operating humidity	35% to 85% (with no condensation)		
Ambient storage temperature	-15 to 65°C (with no icing)		
Ambient storage humidity	35% to 85% (with no condensation)		
Degree of protection	IEC60529: IP20		
Case	SECC (coated)		
Ground	Ground at a resistance of less than 100 Ω.		
Weight	Approx. 500 g	Approx. 400 g	

## CIDRW Controller

Item	Model	
Host interface	RS-232C	
Power supply voltage	24 VDC (max. fluctuation 20.4 to 26.4 VDC)	
Power consumption	150 mW max.	
Insulation resistance	50 MΩ min. (at 500 VDC) between the power supply terminals and the frame ground terminal	
Dielectric strength	500 VAC (50/60 Hz, 1 minute) between the power supply terminals and the ground terminal (leakage current: 3.5 mA max.)	
Vibration resistance	10 to 150 Hz, 0.20-mm double amplitude, 15-m/s <sup>2</sup> acceleration with 10 sweeps of 8 min each in X, Y, and Z directions	
Shock resistance	150-m/s <sup>2</sup> acceleration for 3 times each in X, Y, and Z directions (18 times in total)	
Ambient operating temperature	0 to 40°C (with no icing)	
Ambient operating humidity	10% to 85% (with no condensation)	
Ambient storage temperature	-15 to 65°C (with no icing)	
Ambient storage humidity	10% to 95% (with no condensation)	
Degree of protection	IEC60529: IP20	
Ground	Ground at a resistance of less than 100 Ω.	
Weight	Approx. 580 g	

## ID Link Unit

Item	Model
	<p style="text-align: center;">V700-L11 </p>
<b>Host interface</b>	RS-232C or RS-485
<b>Power supply voltage</b>	24 VDC (max. fluctuation 20.4 to 26.4 VDC)
<b>Power consumption</b>	10 W max.
<b>Insulation resistance</b>	50 MΩ min. (at 500 VDC) between the power supply terminals and the frame ground terminal
<b>Dielectric strength</b>	1,000 VAC (50/60 Hz, 1 minute) between the power supply terminals and the frame ground terminal (leakage current: 5 mA max.)
<b>Vibration resistance</b>	10 to 150 Hz, 0.20-mm double amplitude, 15-m/s <sup>2</sup> acceleration with 10 sweeps of 8 min each in X, Y, and Z directions
<b>Shock resistance</b>	150-m/s <sup>2</sup> acceleration for 3 times each in X, Y, and Z directions (18 times in total)
<b>Ambient operating temperature</b>	0 to 40°C (with no icing)
<b>Ambient operating humidity</b>	35% to 85% (with no condensation)
<b>Ambient storage temperature</b>	-15 to 50°C (with no icing)
<b>Ambient storage humidity</b>	35% to 85% (with no condensation)
<b>Degree of protection</b>	IEC60529: IP20
<b>Ground</b>	Ground at a resistance of less than 100 Ω. If grounding is not performed properly, transmission specifications may be adversely affected by the surrounding environment.
<b>Weight</b>	Approx. 200 g

# Functional Specifications

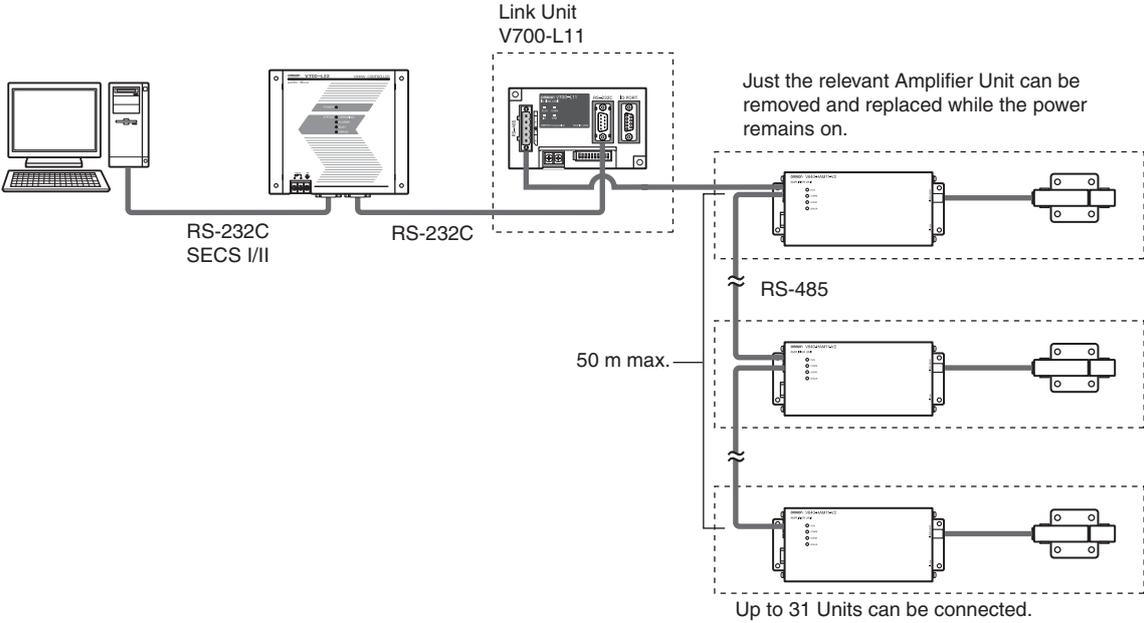
## Serial Type System Configuration Examples

### System Configuration Using CIDRW Controller (V700-L22)

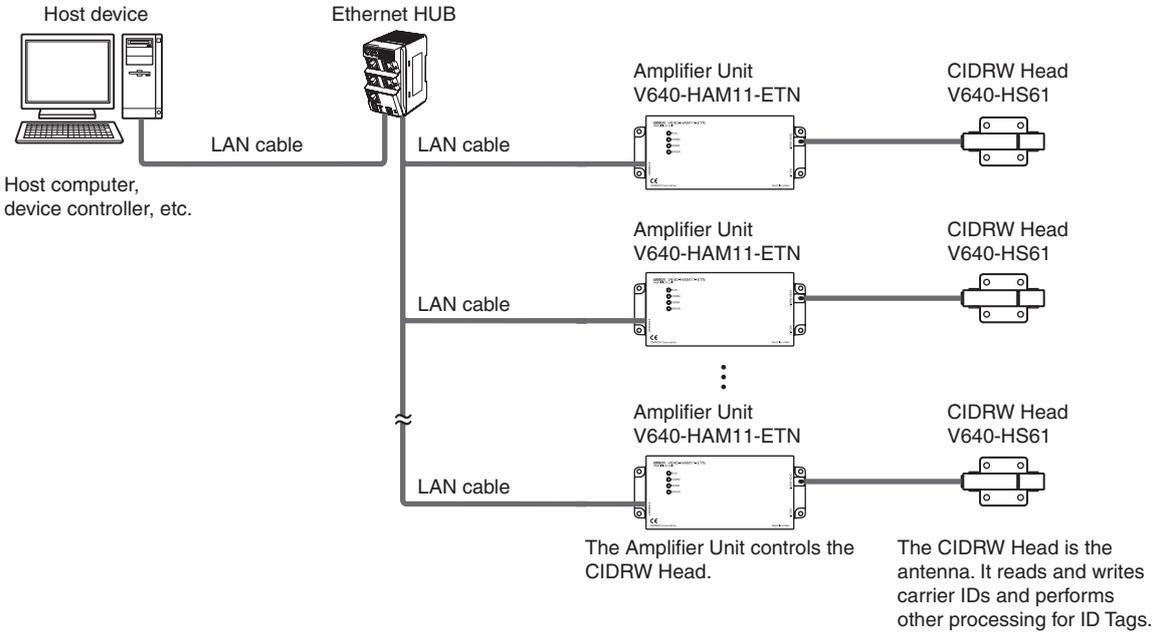
The Carrier ID Reader Writer (CIDRW) System is an RFID system that conforms to SEMI standards. The V700-L22 CIDRW Controller, the V640-HAM1□ Amplifier Unit, the V640-HS6□ CIDRW Head, and a Texas Instruments ID Tag can be used to configure a Carrier ID Reader Writer (CIDRW) System that conforms to the following standards:

**Note:** SEMI: Semiconductor Equipment and Materials International  
SECS: SEMI Equipment Communications Standard

#### CIDRW System



## Ethernet Type System Configuration Examples



**Note:** If the IP address is set on the DIP switch, it will be in the form 192.168.1.□□□. The subnet mask is always 255.255.255.0. The IP address of the Amplifier Unit can be either set on this DIP switch or the desired IP address can be set in ROM. If pins 1 to 5 on the DIP switch are all turned OFF, the IP address that is set in ROM will be used.

## Safety Precautions

### WARNING

The product is not designed or rated for ensuring the safety of persons.  
Do not use it for such purposes.



### Precautions for Safe Use

Please observe the following precautions for safe use of the products.

- Never use the product in an environment where combustible or explosive gas is present.
- Please separate from a high-pressure equipment and the power equipment to secure the safety of the operation and maintenance.
- In the installation, please tighten the screw surely. (Recommended 1.2N.m)
- Please do not insert foreign bodies such as water and the wires from the space of the case.
- Please do not dismantle, repair or modify this product.
- Please process as industrial waste when you abandon this product.
- When you work on wiring and put on and take off cables, CIDRW head, please perform it after switching off this product.
- Provide enough space around this product for ventilation.
- Please avoid installing this product near the machinery (a heater, a transformer, large-capacity resistance) that has high the calorific value. When you felt abnormality to this product, and having switched it off.

Confirm the effects of radio waves on medical devices. The following guideline is from JAISA (Japan Automatic Identification Systems Association).

This product is a reader-writer that uses radio waves for RFID equipment. The application and location of this product may affect medical devices. The following precaution must be observed in the application of the product to minimize the effects on medical devices.

Any person with an implanted medical device must keep the area where the device is implanted at least 22 cm away from the antenna of a stationary or modular RFID device.

### Precautions for Correct Use

Please observe the following precautions to prevent failure to operate, malfunctions, or undesirable effects on product performance.

#### About installation Site

Do not install this product in the locations subject to the following conditions.

- Place where direct sunshine strikes.
- Place with corroded gas, dust, metallic powder, and salinity.
- Place with condensation due to rapid temperature fluctuations.
- Place with condensation due to high humidity.
- Place where vibration and impact more than being provided by specification are transmitted directly to main body.
- Place with spray of water, oil, and chemical medicine.
- The working temperature is within the range stipulated in the specifications.

#### About depositoty Site

- Please follow the save ambient temperature / humidity, and keep this product.

#### About wiring

- Use the power supply voltage specified in this document.
- Ensure correct polarity when connecting to the +/- power supply terminals.
- Do not run high-voltage lines and power lines though the same conduit.
- To avoid static-induced failure, wear a wrist band or equivalent means to release a static charge before touching a terminal or a signal line within a connector.
- In using this product in EU association states, the cable for DC power supply to this product must not be extended over 3m.
- When you put on and take off a CIDRW head, please do not add excessive power to a connector.
- Please connect the correct CIDRW head to the amplifier unit.

#### About cleaning

- Use alcohol to clean this product.
- Never use an organic solvent such as thinner, benzene, acetone or kerosene, as it will attack resin components or case coating.

#### Power and Ground Cables

- Use an appropriate ground. An insufficient ground can affect this product operation or result in damage to this product.

#### About the communication range and time

- Do the communication test with Transponder in the installation environment because the metal, noise and ambient temperature around CIDRW head damage to the communication range and time.
- Install CIDRW head and ID tag in the appropriate distance because the communication range can change by the difference of ID tag specifications.

## About mounting

- This product communicates with ID Tags using the 134 kHz frequency band. Some transceivers, motors, monitoring equipment, and power supplies (power supply ICs) generate electrical waves (noise) that interfere with communications with ID Tags. If you are using the product in the vicinity of any of these devices, check the effect on communications in advance.
- In order to minimize the effects of noise, ground nearby metal bodies with a grounding resistance not exceeding 100 ohms.
- When mounting CIDRW Heads, tighten the screws tightly. (Recommended 0.6N·m)
- When multiple CIDRW Heads are mounted next to each other, communications performance could be impaired by mutual interference. Read and follow the information in User's Manual on mutual interference when installing multiple heads.

## Screw Locking Adhesive

- Screw locking adhesive (screw lock) may cause deterioration and cracking of resin parts; do not use it for screws in resin parts or anywhere where resin washers are used.

## Communications with the Host Device

### (V640-HAM11-V3/V640-HAM11-L Only)

- Communicate with the host device only after confirming that the CIDRW Controller has started. Also, unstable signals may occur at the host interface when the CIDRW Controller is started. When initializing operation, clear the reception buffer at the host device or take other suitable methods to clear unwanted signals.

## Startup Precaution

- Never turn OFF the power supply while the CIDRW Controller is starting, including when power is turned ON, when the mode is changed, or when the CIDRW Controller is being reset. Doing so may damage the CIDRW Controller.

## Application Precaution

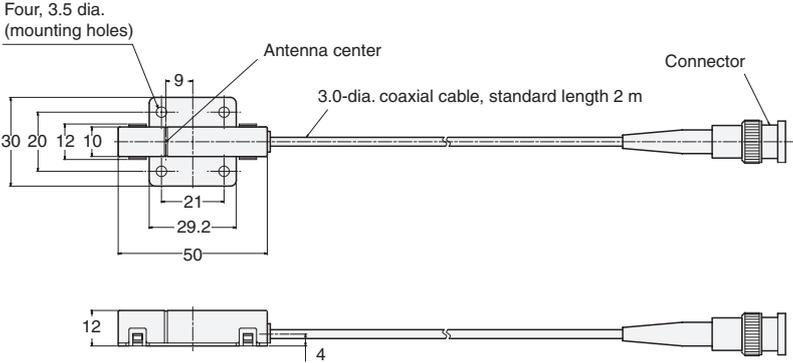
### (V640-HAM11-ETN/V640-HAM11-L-ETN Only)

- Never turn OFF the power supply while setting the IP address, subnet mask, or Web password. Doing so may damage the Amplifier Unit.

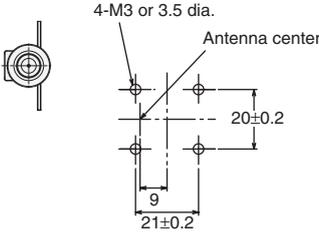
Dimensions

CIDRW Head

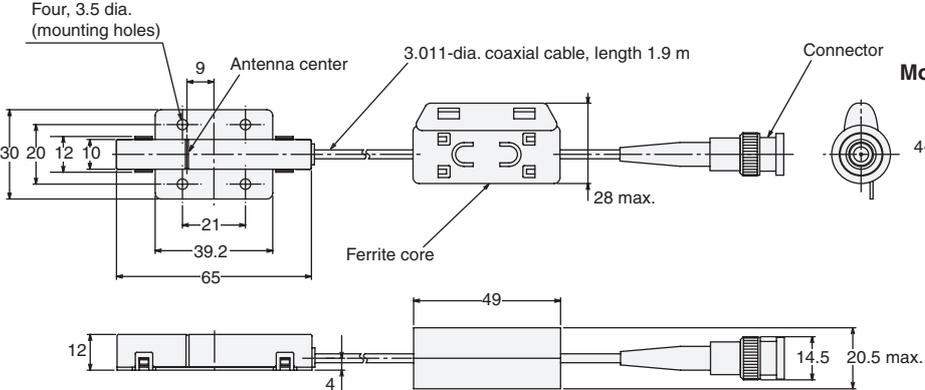
V640-HS61



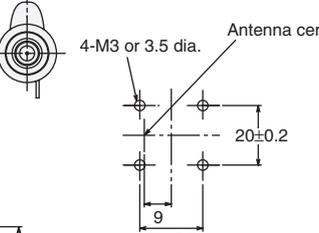
Mounting Hole Dimensions



V640-HS62

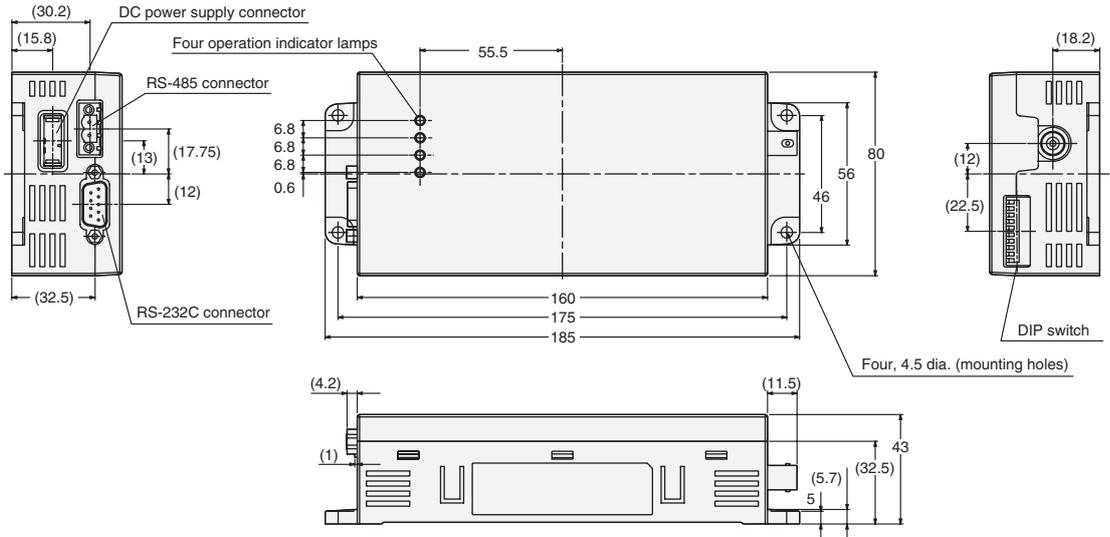


Mounting Hole Dimensions

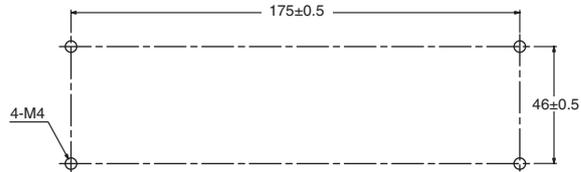


Amplifier Unit

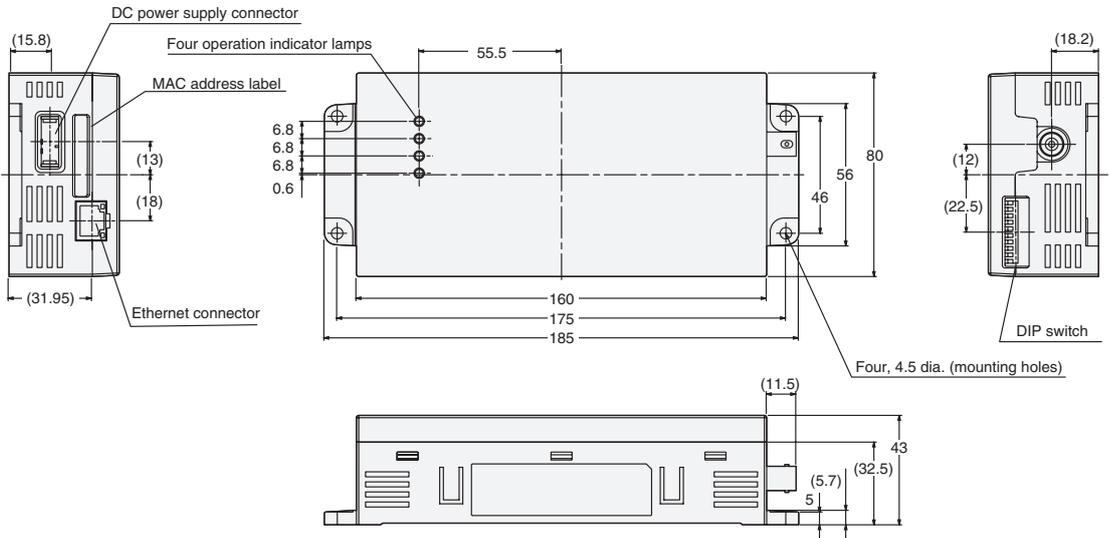
V640-HAM11-V3  
V640-HAM11-L



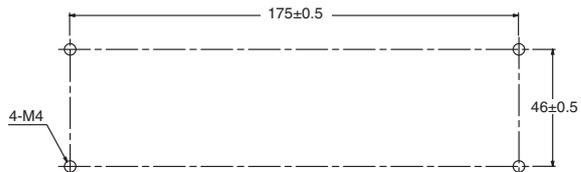
Mounting Hole Dimensions



V640-HAM11-ETN  
V640-HAM11-L-ETN

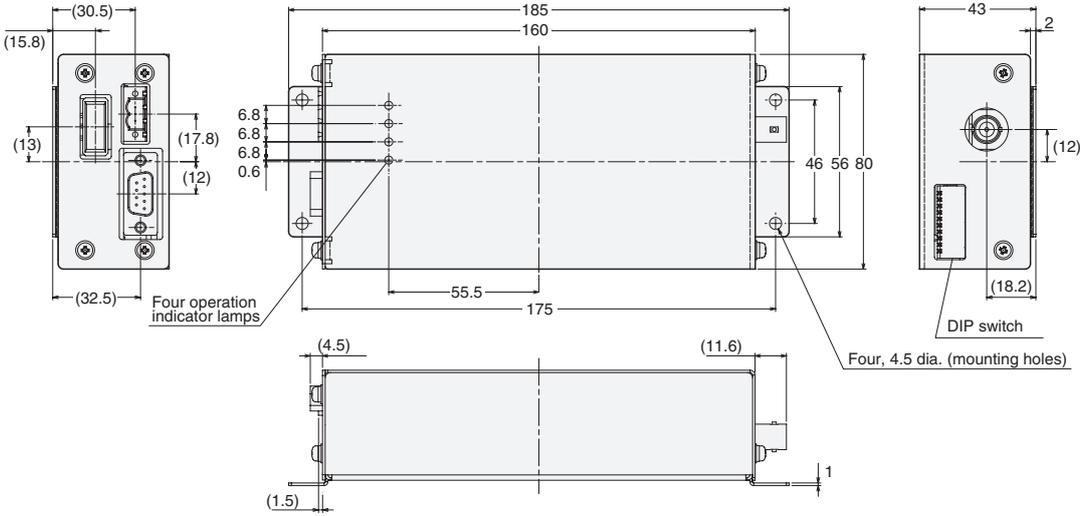


Mounting Hole Dimensions

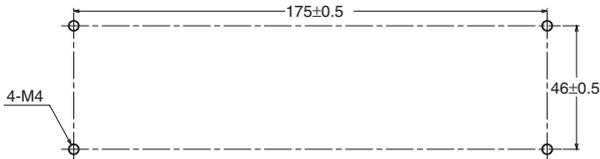


Amplifier Unit

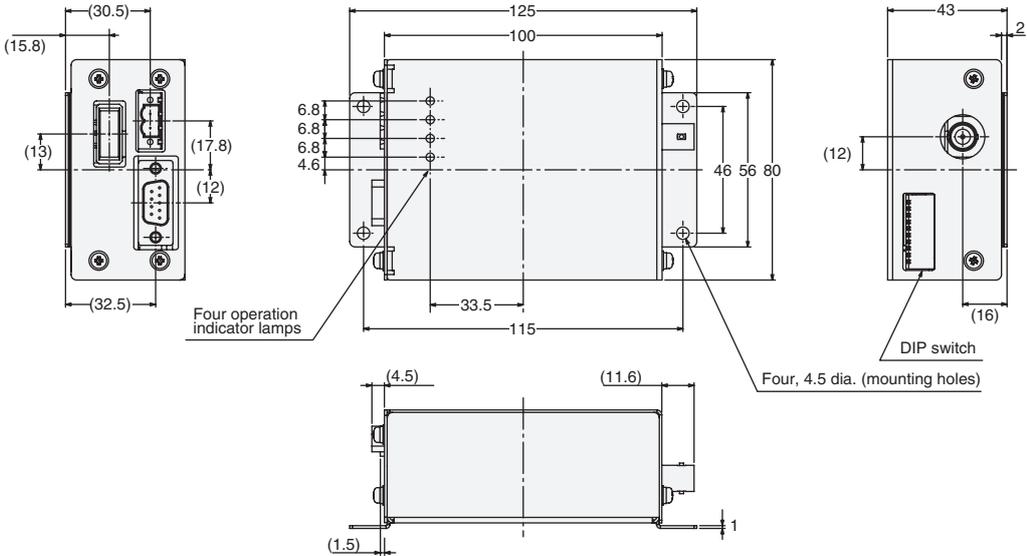
V640-HAM11-V2



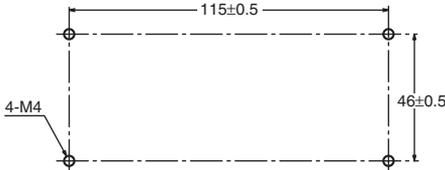
Mounting Hole Dimensions



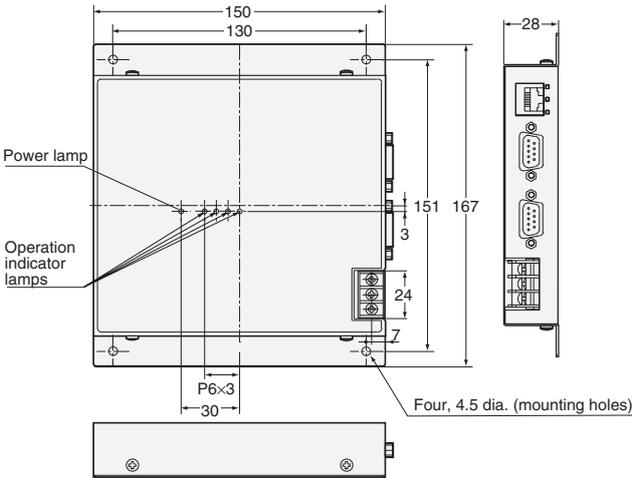
V640-HAM12



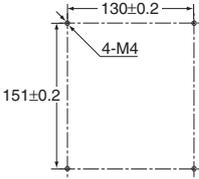
Mounting Hole Dimensions



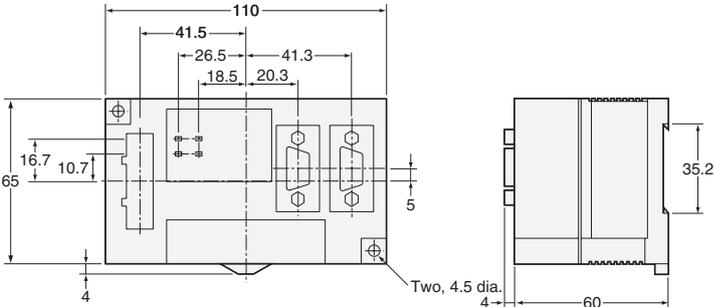
**CIDRW Controller**  
**V700-L22**



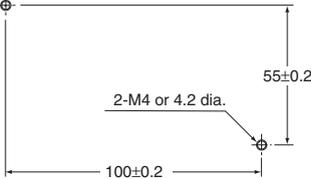
**Mounting Hole Dimensions**



**ID Link Unit**  
**V700-L11**



**Mounting Hole Dimensions**



## Read and Understand This Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

## Warranty and Limitations of Liability

### WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

### LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

## Application Considerations

### SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this catalog.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

### PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

## Disclaimers

### CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

### DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

### PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

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In the interest of product improvement, specifications are subject to change without notice.

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